

## SCIENCE TO SOLUTIONS



# A Rapid Assessment for Tracking Success of New England Cottontail Conservation Efforts

### *In Brief:*

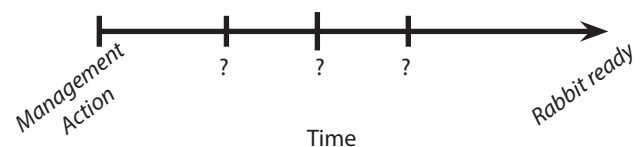
The loss of early successional habitat in the Northeast poses a threat to wildlife species that depend on young forests. One of those species, the New England cottontail, is the focus of a targeted conservation strategy designed to re-establish early successional habitat across the rabbit's native range. A new assessment tool, highlighted in a recent study, can be used to evaluate the quality of this habitat on managed lands. The future application of this tool will enable conservation partners to quantify and track benefits to the species over time.

Early-successional forests and associated shrublands or thickets are important habitats for many species, which rely on dense understory to protect them from predators. One such species, the New England cottontail (*NEC*, *Sylvilagus transitionalis*), has been the focus of interagency conservation efforts throughout the northeastern US. Evaluating management outcomes to ensure that thicket habitats are suitable for the NEC is an essential component of the overall conservation strategy.

In response to this need, University of New Hampshire researchers, USDA's Natural Resources Conservation Service (NRCS) staff, and other partners developed a method to evaluate the suitability of lands managed for NEC (Warren et al. 2016). This method identifies those habitat elements that may limit rabbit survival or productivity at a site. Although the approach provides a rigorous evaluation of resource availability for NEC, it is not a practical method to quickly gauge early progress or identify potential shortfalls early in site development that may hinder future habitat suitability.

The most important feature of affecting the suitability.

Early and regular assessments of managed parcels allow conservation partners to determine if critical habitat components are developing at an appropriate rate. If issues are identified, further intervention can ensure that conservation lands will support NEC populations long-term. In addition, site visits aid in estimating when managed lands are "rabbit ready" and provide opportunities to engage with cooperating landowners.



*Understanding how a managed parcel of land is progressing toward suitability for NEC will likely require several visits. These visits will include an assessment of habitat features that affect rabbit survival.*

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## Need for Multiple Site Visits as a Parcel Develops

Habitat features that affect suitability for New England cottontails develop at different rates. For example, it may take more than 2 growing seasons for understory vegetation to respond to conservation activities. It may be useful to examine the response of native versus invasive shrubs relatively soon after initial habitat management so that if intervention is warranted, it can be done when such actions are most effective.

The rapid assessment protocol presented here can be used to evaluate specific habitat features through time. Development of these features vary with parcel-specific conditions (e.g., soil quality and previous land use), so the following sequence should only be considered an approximation. Site visits are not intended to provide rigorous, quantitative information but rather an impression of how well the site is progressing toward suitability for NEC. The information on specific features should be obtained during a 1-2 hour walk through the managed habitat.

Visit #1 - Features to consider after  $\leq 2$  growing seasons

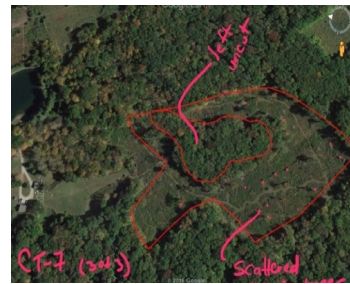
- Is regeneration tree or shrub-dominated?
- Are invasive shrubs abundant and is treatment needed?
- Will browsing affect species composition or density of understory cover?
- Should pockets of native shrubs be fenced to protect them from deer or moose?



*Example of intense browsing pressure on red maple sprouts by moose in western Massachusetts. Such foraging may shift composition of understory vegetation and provide an advantage to unpalatable invasive shrubs.*

## Visit #2 - Features to consider after 2-4 growing seasons

- Consider stratification of managed habitat into sub units based on understory density to identify pockets of dense cover and those that may be lagging in their development of that feature. (Assessment of understory cover is described in detail in the next section)
- Initial identification of other features that may affect future suitability.



*Google Earth*

*Recent aerial photography obtained using Google Earth and used in the field to stratify homogenous units and identify potential features of possible concern (e.g., snags or seed trees that may subsequently function as perches for raptors hunting NEC).*

This visit will assess a number of features that were not or could not be evaluated prior to management activity. For example, how will local deer respond to young and re-sprouting vegetation? Deer browsing may slow down or limit the density of regenerating understory cover. Browsing may also be selective toward native trees and it may be appropriate to fence pockets of native shrubs until they are established.

By this time, it may be possible to stratify portions of the managed parcel into relatively homogenous units that will facilitate subsequent evaluations.



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**Visit #3 - Features to consider after 4-6 growing seasons**

- Construct or bolster brush piles if needed in pockets of marginal cover.
- Consider removing potential raptor perches if they seem problematic.



It should be apparent if understory density is progressing toward a level that will provide adequate cover for cottontails. If not, consider brush piles (at least 2/acre). If these are already in place, consider enhancing them to ensure they are above the height of expected snow accumulation. Likewise, even if adequate understory cover is developing, there may be residual trees or snags that will pose potential problems. Residual trees are left behind as: seed trees to ensure regeneration, prominent mast trees that can be attractive to local deer and turkey populations, legacy trees that maintain structural diversity of the stand, and roosting habitat for bats and other primary and secondary cavity-nesting species. Once cottontails are established at a site, however, such trees may provide raptors with an ambush perch for hunting rabbits and removal may be necessary.

**Visit #4 - Features to consider after 8 growing seasons – is it ready?**

- Consider site visits by a team that includes NRCS and state biologists involved with habitat restoration and conduct a complete habitat audit with special attention to the proportion of the site that provides dense cover.
- Resolve any shortcomings with specific recommendations (e.g., additional brush piles, increasing cover/grass interface, etc).

At this stage of development, understory density should be evaluated to determine relative habitat suitability. Rather than using plot-based stem counts, visual obstruction may be an efficient alternative (described below). This approach is not meant to replace the approach developed by Warren et al. (2016). If there is an intention to evaluate cottontail fitness (including survival and subsequent reproduction) among a group of habitats, the rapid assessment approach may not be sufficient in describing quantitative features of a site that are needed for such comparisons.



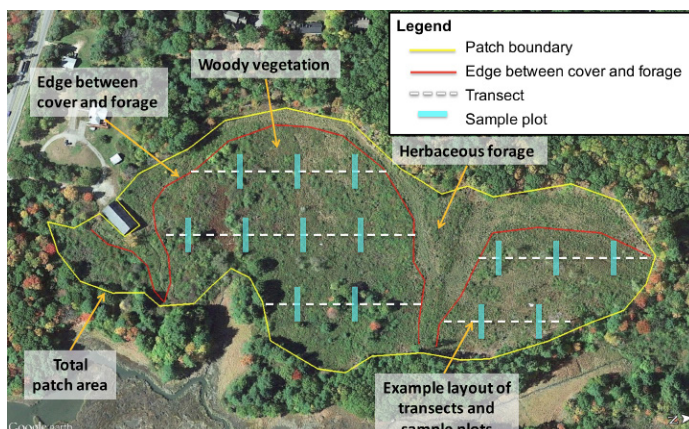
*Range pole positioned 10 meters from observer and the percentage of each 0.5 m segment that is covered by vegetation is used to index cover for New England cottontails. Height of dominant vegetation within 10 meters of the pole is also estimated. Left photo: average height is ~1 meter and visual obstruction at that height is ~90%. Right photo: average height is >2 meters and visual obstruction is 100%.*

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**Tracking habitat development – understory cover is critical**

The most important feature affecting the suitability of a site for NEC is understory cover. For the rapid assessment protocol, an index of visual obstruction (measured with a range pole) is an efficient alternative to plot-based counts of understory stems. During visit #4, the evaluation might conclude that the parcel “is not rabbit ready” - coverage by dense understory is adequate but height is not. The parcel may, however, be “moving in the right direction” and in several growing seasons, understory vegetation may reach optimal height.

It is important to note that although values of the suitability indices developed by Warren et al. (2016) are used in this example, the rapid assessment approach is intended to be qualitative rather than quantitative. Index values, therefore, are intended to guide initial applications of this approach, not to provide a suitability score.



Assessing the variables used in the HSI is accomplished by establishing permanent transects and sample plots on conservation lands. Correct placement of transects and plots is a critical step in accurately quantifying habitat quality (Warren et al. 2016).

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*Dr. Litvaitis and his research team work with partners to conduct projects on the effects*

*of contemporary land uses on wildlife populations, especially species that are hampered by habitat fragmentation.*

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**Cite as**

Working Lands for Wildlife. 2019. A Rapid Assessment for Tracking Success of New England Cottontail Conservation Efforts. [4spp.nrcs.usda.gov/wildlife](https://4spp.nrcs.usda.gov/wildlife)

**Sources**

Warren, A., J. A. Litvaitis, and D. Keirstead. 2016. Developing a Habitat Suitability Index to Guide Restoration of New England Cottontail Habitats. *Wildlife Society Bulletin*. DOI:10.1002/wsb.616

Fuller, S. and A. Tur. 2012. Conservation Strategy for the New England Cottontail (*Sylvilagus transitionalis*). U.S. Fish and Wildlife Publications. Paper 320.

**Additional Resources**

To learn more about New England Cottontail conservation, visit the Working Together for the New England Cottontail website at [newenglandcottontail.org](http://newenglandcottontail.org)

To learn more about the Natural Resource Conservation Service's Working Lands for Wildlife partnership, visit [nrcs.usda.gov/wildlife](http://nrcs.usda.gov/wildlife)

To learn more about the Natural Resource Conservation Service's Conservation Effects Assessment Project, visit [nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/ceap/](http://nrcs.usda.gov/wps/portal/nrcs/main/national/technical/nra/ceap/)

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